



# Autism and Epilepsy:

## *Clinical profile across the lifespan*

*Presentation for the Interagency Autism Coordinating Committee  
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# Seizure disorders affect 15-30% of children with ASD

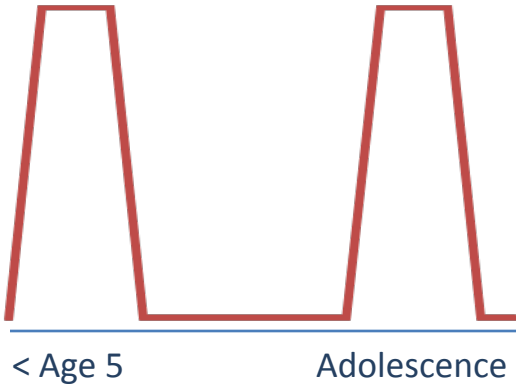
## Prevalent in ASD

- Epilepsy
- Epileptiform abnormalities

## Impact

- Poorer outcomes than ASD individuals without epilepsy
  - Adaptive outcomes
  - Behavioral outcomes
  - Social outcomes
- Increased behavioral challenges
- Increased motor problems
- Increased mortality rate

- Age of onset is bimodal
- Higher prevalence of epilepsy in children with
  - Syndromic autism
  - Motor impairments
  - Intellectual disability
  - Females (often associated with cognitive impairments)
- Relationship of autistic regression to epilepsy is not definitive
- Children with infantile spasms more likely to develop autism



# The clinical profile of autism with epilepsy

## Epilepsy in autism: features and correlates

Patrick F. Bolton, Iris Carcani-Rathwell, Jane Hutton, Sue Goode, Patricia Howlin and Michael Rutter

BJPsych

The British Journal of Psychiatry (2011)  
198, 289–294. doi: 10.1192/bjp.bp.109.076877

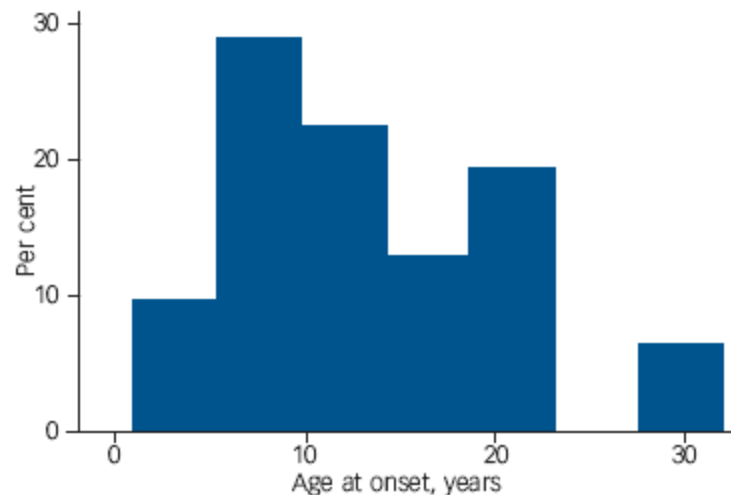


Fig. 1 Age at onset of seizures.

## Bolton et al., 2011

- 175 individuals followed through 21 years
- 22% developed epilepsy (after 10 yrs for most)
- More common in females than males
- Epilepsy associated with lower nonverbal IQ, lower verbal abilities and social skills



## Amiet et al., 2008

- Meta-analysis of 24 studies on autism (N = 2112) and epilepsy (N = 1530)
- Epilepsy present in 21.5% of patients with autism and ID vs. 8% in patients with autism without ID
- Girls with autism more likely to have epilepsy



# Autism Treatment Network

## Rates of epilepsy

N = 4,321

	Autism N=2895	Aspergers N=369	PDD N=1057	ASD N=4321
NO	56.9%	7.6%	21%	85.5%
YES	10.1%	0.9%	3.5%	14.5%
TOTAL	67%	8.5%	24.5%	100%



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# Autism Treatment Network Rates of epilepsy by IQ

N = 4,321

	<b>&lt;70 N=2370</b>	<b>&gt;70 N=1951</b>	<b>Total N=4321</b>
<b>No</b>	<b>46.3%</b>	<b>39.2%</b>	<b>85.5%</b>
<b>Yes</b>	<b>8.5%</b>	<b>5.9%</b>	<b>14.5%</b>
<b>Total</b>	<b>54.8%</b>	<b>45.3%</b>	<b>100%</b>

# Epilepsy and sleep disturbance

- Epilepsy is associated with sleep disturbances in children with and without ASD.
- Recent review of 17 studies on sleep and ASD (Hollway and Aman, 2011) found that epilepsy and other medical conditions are associated with disrupted sleep in individuals with ASD.
- Sleep disturbances are associated with:
  - Increased aggressive behavior, irritability, and inattentiveness
  - Sleep disturbance, rather than seizure severity, may contribute to difficulties with irritability and attentiveness (Becker et al., 2004)



# Clinical evaluation and treatment

- All seizure types reported, but complex partial seizures are most frequent; signs of CPS are similar to some ASD behaviors (unresponsive to name, repetitive movements).
- EEGs are helpful but difficult to perform. Prolonged/overnight studies are more sensitive than routine ones.
- High rates of epileptiform EEGs have been reported in children with ASD without clinical epilepsy; clinical significance is unclear.
- Evaluation of genetic etiology is important because seizures are more common in syndromic forms of ASD.
- Anticonvulsant treatment choice is related to type of seizure, EEG findings, and tolerability of medication.

## **Common neurological co-morbidities in autism spectrum disorders**

Kiran P. Maski<sup>a</sup>, Shafali S. Jeste<sup>b</sup> and Sarah J. Spence<sup>a</sup>

**Current Opinion in Pediatrics** 2011, 23:609–615



# Current Standards for Treatment and Management

## Current Standards

- AAP Identification and Management of ASD
- ASD Practice Parameter  
(American Academy of Neurology and Child Neuro)
- AAP Autism Tool Kit

## Limitations

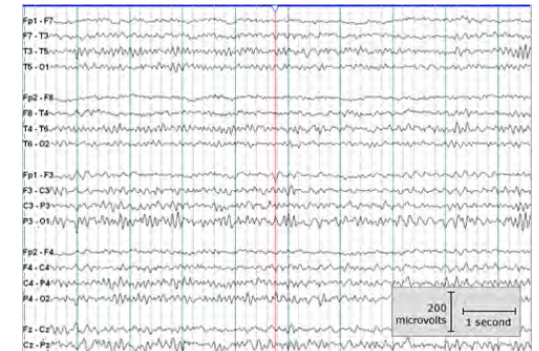
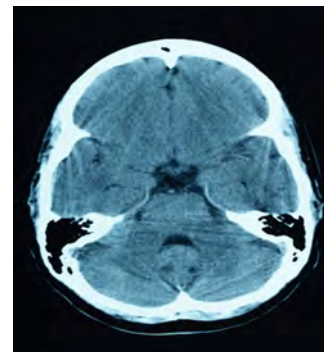
- Need more information on evaluation of epilepsy
- Autism Tool Kit is resource but not guideline



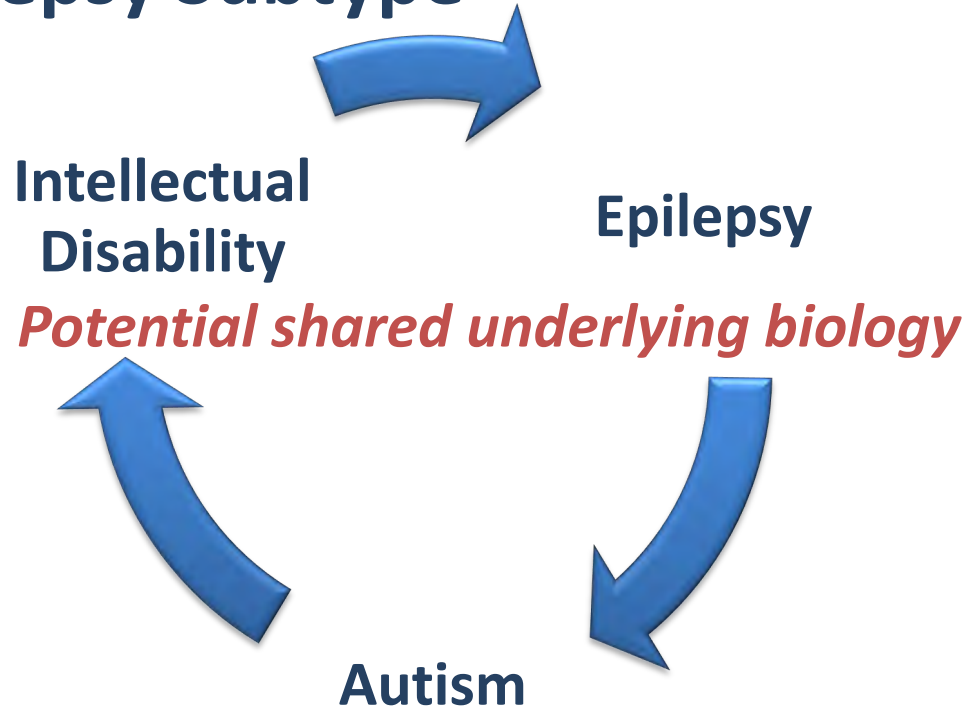
## ATN/AIR-P Activities



- **Clinical Practice Guidelines for EEG**
- **Clinical Practice Guidelines for Neuroimaging testing**
- **To be published in 2013**



# Autism-Epilepsy Subtype



- Identifying this shared biology can have consequences for identifying
  - common genetic and other types of risk factors
  - common biological targets for treatment